Part II - Risk Assessment - 201.4(c)(2)

BACKGROUND

I. Introduction

A. This mitigation plan focuses primarily on natural disasters, however, during the November 20 planning session with State and Federal agencies, two man-made risks were identified. Of these two man-made risks, terrorism is included under this risk assessment. This section of the plan will be reviewed following the approval of each local plan to include risk information from those plans.

1. Because chemical accidents are not a threat to infrastructure, the decision was made not to include chemical spills/contamination in this plan. The two major threats are hazardous material transport along the I-80 and rail corridors and anhydrous ammonia storage, the most frequently reported extremely hazardous substance in Nebraska under the Superfund Amendment Act of 1986. The largest storage of hazardous materials is on private property and is regulated under EPA's Risk Management Program. The owners of the material mitigate the danger to people. It is expected that local planning will include specific hazardous material sites in their jurisdiction plans.

2. All disasters discussed at the planning meeting are included in this risk assessment with the exception of chemical spills/contamination. Other disasters that do not occur inside the state of Nebraska, such as volcanoes or tsunamis, were not discussed and are not included. In completing the risk assessment, the planning group considered all state facilities in all regions of the state.

B. In this risk assessment, certain information regarding critical infrastructure location can not be provided since the Governor's Homeland Security Policy Group determined that Nebraska's critical infrastructure is protected information. However, an extensive database with all state facilities is on file with the Department of Roads, Department of Administrative Services Division of Risk Management, and the Nebraska Emergency Management Agency. The State facilities considered critical are included in this list but will not be identified as critical infrastructure separately. All state facilities comply with state building codes and therefore are less vulnerable to certain hazards.

II. Hazard Identification

During the November 20, 2002, meeting, the attendees identified ten disasters for the state. After identifying these disasters, the attendees brainstormed various possible mitigation activities to respond to each individual disaster. These activities were considered in the development of the goals and objectives in Part III. Of these ten identified disasters, nine are addressed in this risk assessment:

Agricultural	Flooding	Thunderstorms
Drought	Severe Winter Storms	Tornado

III. Vulnerability

A. There are certain limitations within this risk assessment. By investigating occurrences of past disasters, population, and considering locations of critical infrastructure, certain locations can be determined to be at high risk. However, with some disasters such as thunderstorm, high wind, and winter storms, the likelihood of structures being affected is equal across the state.

B. "While meteorologists and climatologists agree weather patterns can increase chances for severe storms over large geographic areas, a specific spot within the area has no greater or lesser chance of being hit. 'In other words, the idea that tornadoes like to return to the scene of the crime can't be proven,' said Harold Brooks, research meteorologist with the National Severe Storms Laboratory in Norma, Oklahoma. 'There's no truth to it. You really can't distinguish between the observed record and what you get with random prophesies.'

Allan Dutcher, Nebraska's state climatologist said, "Some research has identified tornado 'hot boxes,' place where twisters occur with great frequency from year to year. But such regions measure several hundred square miles, not a single zip code. Statistically, a location's tornado history doesn't predict its future. Tornadoes, even in twister-prone regions such as the Great Plains, occur rarely."[1]

C. With other disasters such as tornadoes, patterns and locations of past events can be analyzed to determine vulnerable structures in the state, yet the next tornado can never be predicted. Several ways of determining vulnerable areas in the state exist depending on the type of analysis done. For this plan, the vulnerable portions of the state (generalized into counties for this particular project) have been determined after extensive population and demographic research. Population density is the main indicator of vulnerability for the following reasons:

1. Increased concentration of potential life loss

2. Increased concentration of potential property damage/loss

D. Although this point is the main factor of vulnerability determination, other categories have been taken into consideration to gain the general knowledge of other vulnerable areas of the state.

[1] http://www.journalstar.com/articles/2004/06/23/local/10051453.prt

1. Population Figures

Figure I: Population of the State of Nebraska

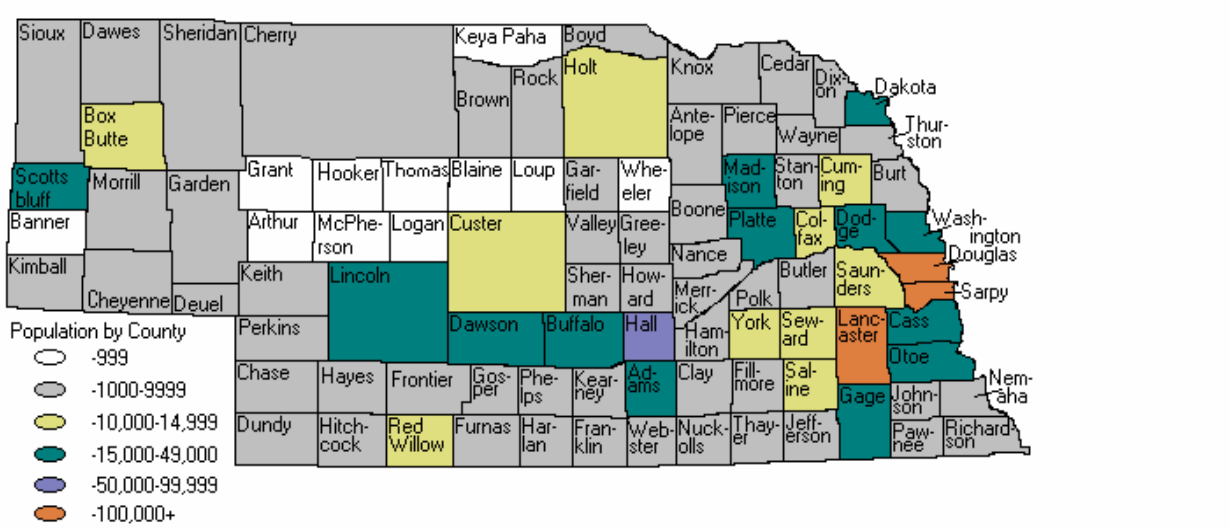
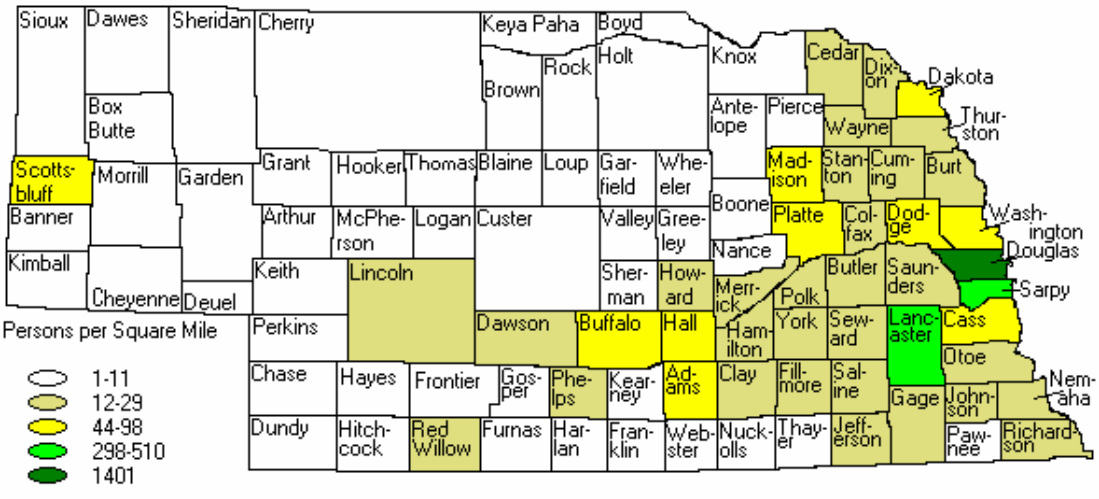


Figure II: Population by Square Mile



2. Other Population Figures

There are three demographic classifications that also indicate more vulnerable populations: immigrants, elderly, and individuals below the poverty level. While simple population map show that the more densely populated areas are on the east and along the I-80 corridor, these demographic breakdowns reveal other vulnerable areas of the state.

Figure III: Percent of Persons 5 Years and Over Who Speak a Language Other Than English at Home[2]

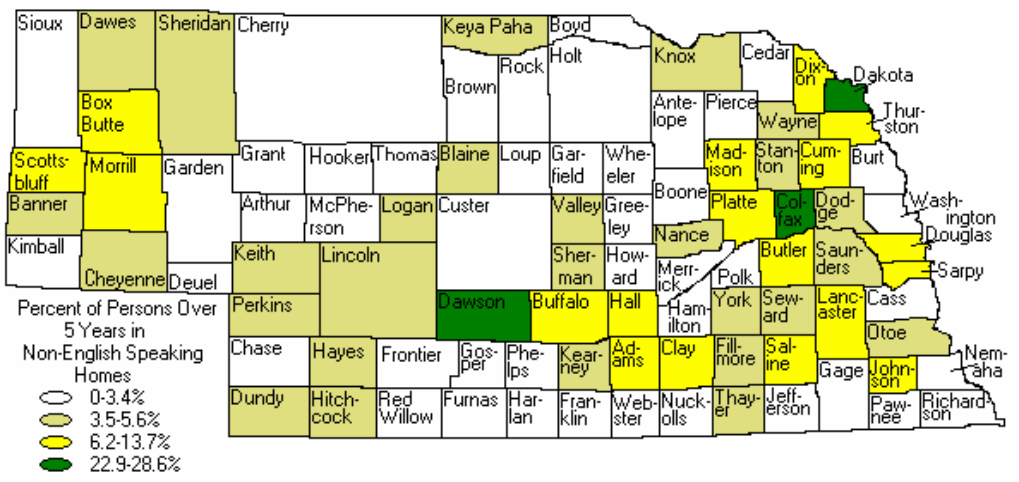
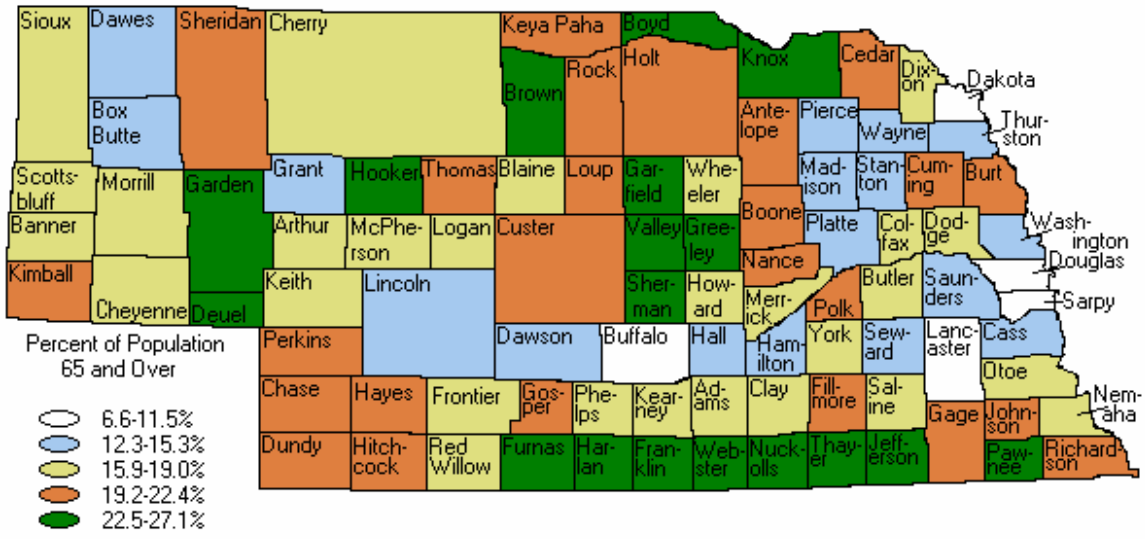
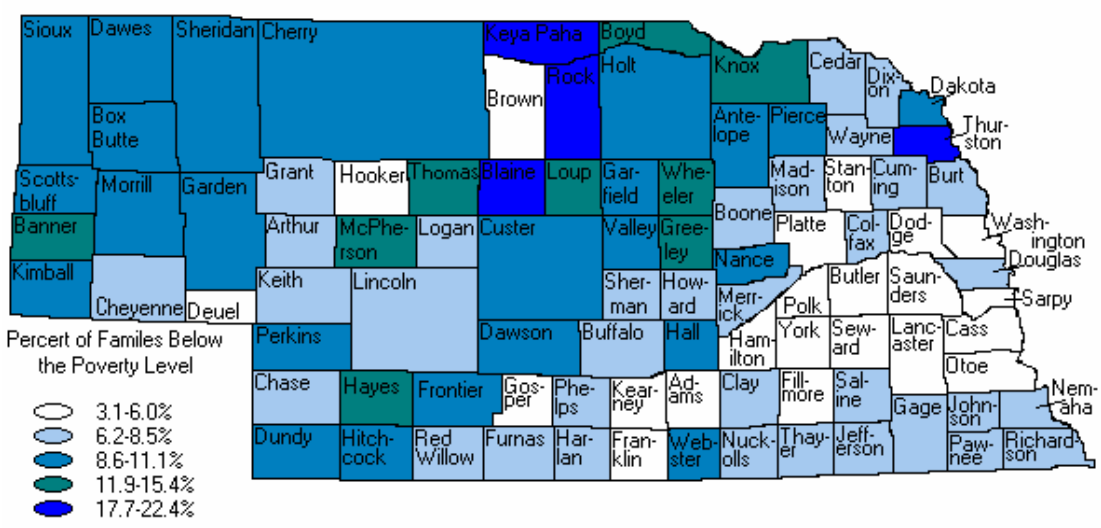


Figure IV: Percent of Persons 65 and Older[3]



[2] http://factfinder.census.gov.servlet/ThematicMapFramesetServlet
[3] same as above

Figure V: Percent of Families Below the Poverty Level[4]



3. With these demographics in mind, several vulnerable areas of the state become evident, for example many elderly people live in the southern portion of the state. As will be seen, tornadoes occur semi-frequently in this portion of the state and population appropriate mitigation measures should be taken. In the counties that have a large immigrant population, public hazard education should be available in languages spoken by the respective population.

4. However, for the purposes of this plan, the most vulnerable counties have been selected on the basis of population. Many of these counties are included in the demographic concerns addressed above as well.

Table I: Top Ten Populated County Statistics

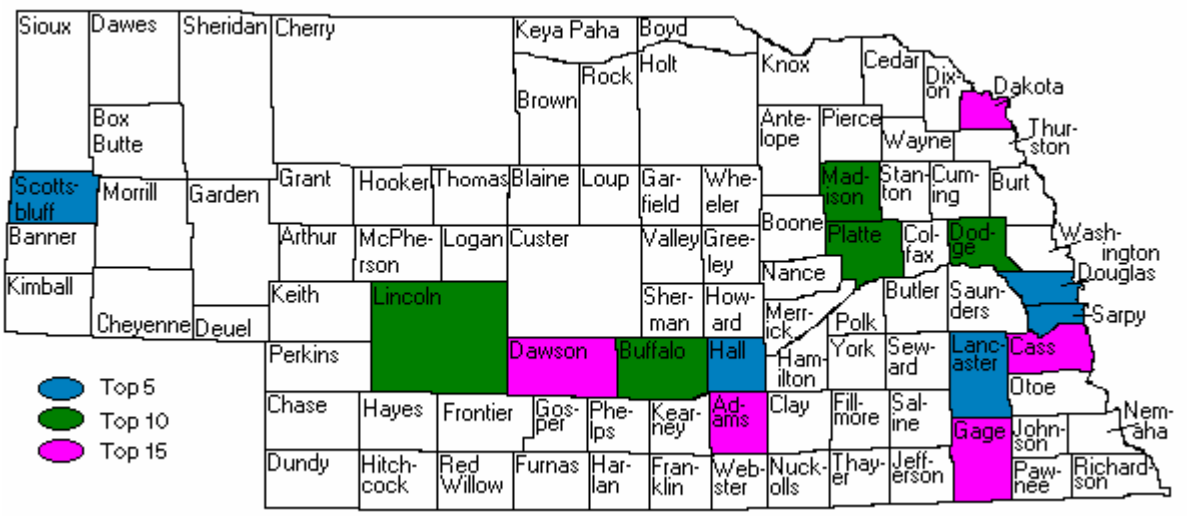
County	Population	% of State Population
Douglas	463,585	26
Lancaster	250,291	15
Sarpy	122,595	7
Hall	53,534	3
Buffalo	42,259	2
Scotts Bluff	36,951	2
Dodge	36,160	2
Madison	35,226	2
Lincoln	34,632	2
Platte	31,662	2

[4] same as above

These top ten populated counties house 1,106,895 (65% of the population of Nebraska) though occupying only 10% of the land in Nebraska. Because of the high population rate living in one tenth of the land in Nebraska, these counties become the most vulnerable to disasters.

As can be seen, the most populated counties are located along the I-80 corridor and in the eastern portion of the state.

Figure VI: Top Five, Ten, and Fifteen Populated Counties



5. The population factor makes these counties overall the most vulnerable to damages from natural hazards. As these counties are at risk, so also are the governmental facilities and critical infrastructure locations inside these counties.

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Table II: Top Ten County State Facility Information

Buffalo County

Department	Description	Area (sq. ft.)	Building Cost
Aeronautics	Kearney Municipal Airport	7,500	$205,088
DAS/Building Division	Maintenance Facility	11,385	$378,638
Department of Roads	Engineers Office and Equipment	768	$57,060
Department of Roads	Office and Equipment Shop	1,800	$129,853
Department of Roads	Office and Equipment Shop	4,400	$300,631
Department of Roads	Office and Equipment Shop	12,090	$1,255,150
Department of Roads	Rest Room Building (I-80 east)	2,221	$383,726
Department of Roads	Rest Room Building (I-80 west)	2,216	$347,827
Game and Parks	Ft. Kearney State Park	7,565	$921,361
Game and Parks	Ft. Kearney State Rec. Area	3,992	$350,218
Game and Parks	War Axe State Rec Area	337	$58,452
Game and Parks	Windmill State Recreation Area	3,834	$602,804
Health and Human Svcs	Kearney- YRTC Complex	168,411	$11,894,652
Historical Society	Historical Society	51,673	$5,271,163
Historical Society	State Museum of History	67,000	$7,045,978
Military Department	Kearney Armory	49,426	$2,845,238
Nebraska Educational TV	Carpenter Communications Center	112,545	N/A
Nebraska Educational TV	Earth Station Antenna 10MT Col	1	$197,960
		Total Cost-	**$32,245,799**

Dodge County

Department	Description	Area (sq. ft.)	Building Cost
Aeronautics	Maintenance Shop	4,500	$70,788
Department of Roads	Office and Equipment Shop	12,320	$1,278,375
Department of Roads	Weigh Station	1,153	$155,400
Game and Parks	Dead Timber State Rec Area	3,188	$194,148
Military Department	Fremont Armory	24,146	$1,670,327
		Total Cost-	**$3,369,038**

Douglas County

Department	Description	Area (sq. ft.)	Building Cost
Correctional Services	Omaha Correctional Center	219,345	$37,638,036
Correctional Services	Nebraska Corrections Youth Center	55,610	$10,936,926
DAS/Building Division	Downtown Education Center	185,000	$17,833,898
DAS/Building Division	Nebraska Omaha Travel Info Center	4,440	$255,951
Department of Roads	Office and Equipment Shop	5,098	$362,410
Department of Roads	District Office and Shop	7,100	$377,882
Department of Roads	Office and Equipment Shop	3,200	$246,622
Department of Roads	District Office	8,428	$574,878

Department of Roads	District Office Addition	1,754	$217,263
Department of Roads	Office and Equipment Shop	6,996	$486,766
Department of Roads	Office and Equipment Shop	4,400	$415,056
Game and Parks	Two Rivers State Rec Area	10,171	$1,252,238
Health and Human Svcs	Thomas Fitzgerald Veterans' Home Complex	139,230	$15,073,757
Historical Society	Gerald R. Ford Conservatory	22,250	$3,316,479
Military Department	Omaha Armory	60,819	$3,088,714
Nebraska Educational TV	KYNE TV Tower	999	$1,010,000
State Patrol	Troop A Headquarters	7,840	$575,089
		Total Cost-	**$93,661,965**

Hall County

Department	Description	Area (sq. ft.)	Building Cost
Department of Roads	District Office	3,840	$290,185
Department of Roads	Testing Laboratory	3,409	$331,096
Department of Roads	Engineers Office and Equipment	2,176	$101,654
Department of Roads	Engineers Office and Equipment	1,451	$162,764
Department of Roads	Office and Equipment Shop	7,769	$505,418
Department of Roads	Office and Equipment Shop	12,160	$261,662
Department of Roads	Restroom/Tour Guide Building	1,650	$180,000
Department of Roads	Rest Room Building	732	$87,434
Game and Parks	Fremont State Recreational Area	13,919	$1,588,671
Game and Parks	Mormon Island State Rec Area	7,718	$914,803
Game and Parks	Cheyenne State Rec Area	338	$58,452
Health and Human Svcs	Administration Building	24,080	$3,218,190
Health and Human Svcs	Anderson Building	24,555	$2,496,211
Health and Human Svcs	Auditorium Building	3,240	$295,183
Health and Human Svcs	WWII Memorial Building	74,170	$14,891,894
Health and Human Svcs	Pershing "P"	28,980	$3,845,352
Law Enforcement	Law Enforcement Training Center	65,104	$9,799,967
Law Enforcement	LETC- Addition 1	48,589	$10,000,000
Law Enforcement	Driving Range Control Bldg/Tower	1,203	$101,457
Law Enforcement	Police Service Dog Kennel	2,365	$400,000
Law Enforcement	Vehicle Inspection Bldg/Tower	5,726	$400,000
Law Enforcement	Firing Range Bldg/Tower	2,797	$400,000
Military Department	Grand Island Armory	25,062	$1,692,878
State Patrol	Troop C Headquarters	7,840	$567,038
		Total Cost-	**$52,590,309**

Lancaster County

Department	Description	Area (sq. ft.)	Building Cost
Board of Agriculture	Coliseum	79,099	$8,868,749
Board of Agriculture	Grandstand	156,544	$11,485,970
Board of Agriculture	Agriculture Hall	33,840	$1,850,459
Board of Agriculture	Administration Building	14,362	$1,025,561
Board of Agriculture	Operation Services	4,200	$194,169
Board of Agriculture	Morton Office Building	2,160	$83,144
Correctional Services	Central Office	22,032	$1,632,231
Correctional Services	Administration Building #1	72,900	$6,788,030

Correctional Services	State Penitentiary	511,853	$55,141,629
Correctional Services	Lincoln Correctional Center	151,000	$21,838,610
Correctional Services	Diagnostic & Evaluation Center	88,000	$11,663,074
Correctional Services	LCC CSI	15,068	$431,698
Correctional Services	LCC Central Pharmacy	2,000	$152,951
Correctional Services	Community Corrections Center	39,777	$5,959,960
DAS/Building Division	State Capitol	401,760	$43,032,714
DAS/Building Division	Governor's Mansion	15,100	$3,360,591
DAS/Building Division	Executive Building	35,148	$3,601,769
DAS/Building Division	IM Services Building	87,022	$14,158,512
DAS/Building Division	Nebraska State Office	518,000	$49,934,915
DAS/Building Division	TSB Center	76,000	$2,536,461
DAS/Building Division	Maintenance Building	8,000	$299,909
DAS/Building Division	Training Administration	11,615	$1,152,937
DAS/Building Division	State Laboratory	37,766	$3,842,877
Department of Labor	Administration Building	32,430	$2,333,005
Department of Labor	Administration Building Addition	21,200	$1,447,573
Department of Roads	District Office and Shop	10,291	$727,769
Department of Roads	Office and Equipment Shop	9,230	$619,025
Department of Roads	Office and Equipment Shop	5,000	$226,533
Department of Roads	Office and Equipment Shop	3,850	$260,159
Department of Roads	Engineers Office and Equipment	2,592	$201,883
Department of Roads	Sign Shop	14,500	$5,597,889
Department of Roads	Service Garage	3,914	$182,718
Department of Roads	Office and Equipment Shop	71,635	$4,573,862
Department of Roads	Central Building	112,900	$8,561,133
Department of Roads	State Patrol Center	40,278	$3,119,572
Department of Roads	Testing Lab	37,960	$3,798,814
Department of Roads	Test Lab Addition	22,394	$5,764,687
Department of Roads	Rest Room Building (I-80)	2,384	$244,404
Department of Roads	Weigh Station	420	$42,915
Education Lands & Funds	School Land Trust Headquarters	9,065	$1,026,489
Game and Parks	Yankee Hill Wildlife Mngmt Area	3,839	$330,749
Game and Parks	Pawnee State Recreation Area	5,276	$542,935
Game and Parks	State Fairgrounds	5,040	$458,857
Game and Parks	District V Headquarters	66,386	$9,572,128
Game and Parks	Branched Oak Sate Recreation Area	13,561	$900,456
Game and Parks	Branched Oak Wildlife Mngmt Area	16,493	$659,399
Health and Human Svcs	Lincoln Regional Center Complex	426,849	$35,145,161
Military Department	State Fairgrounds	36,364	$1,925,534
Military Department	Lincoln National Guard Armory	73,680	$4,672,163
Military Department	DIOM Facility	3,403	$259,022
Military Department	DIOM Facility 1st Addition	4,180	$183,447
		Total Cost-	**$342,415,201**

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Lincoln County

Department	Description	Area (sq. ft.)	Building Cost
DAS/Building Division	Craft State Office	35,218	$2,829,162
DAS/Building Division	Building #2	5,568	$447,292
Department of Roads	Rest Room Building (I-80 east)	2,491	$404,530
Department of Roads	Rest Room Building (I-80 west)	2,491	$443,397
Department of Roads	District Office	3,840	$290,185
Department of Roads	District Office	4,760	$387,124
Department of Roads	Testing Laboratory	3,547	$343,387
Department of Roads	District Office	8,316	$380,408
Department of Roads	Office and Equipment Shop	4,600	$476,276
Department of Roads	Office and Equipment Shop	5,398	$406,013
Department of Roads	Weigh Station	728	$63,771
Department of Roads	Weigh Station	624	$23,358
Department of Roads	Office and Equipment Shop	7,600	$186,890
Department of Roads	Weigh Station	728	$63,771
Department of Roads	Rest Room Building (I-80 east)	570	$71,918
Department of Roads	Rest Room Building (I-80 west)	800	$95,688
Department of Roads	Tour Guide Building	100	$125,438
Department of Roads	Tour Guide Building	100	$125,438
Department of Roads	Office and Equipment Shop	960	$21,883
Game and Parks	North Platte Hatchery	9,508	$1,069,778
Game and Parks	District IV Headquarters	17,552	$1,560,812
Game and Parks	Buffalo Bill Ranch	62,920	$4,709,846
Game and Parks	Cedar Valley Wildlife Mgmt Area	5,000	$166,288
Military Department	North Platte Armory	28,866	$1,832,226
Nebraska Educational TV	KXNE TV Tower	999	$1,515,000
Nebraska Educational TV	KPNE TV Building	1,768	$202,000
Nebraska Educational TV	KPNE TV Tower	999	$1,515,000
State Patrol	Troop D Headquarters	10,832	$321,331
		Total Cost-	**$20,078,210**

Madison County

Department	Description	Area (sq. ft.)	Building Cost
Department of Roads	District Office and Shop	4,662	$586,045
Department of Roads	Office and Equipment Shop	9,556	$639,324
Department of Roads	Office and Equipment Shop	1,708	$130,898
Department of Roads	District Office	3,840	$302,941
Game and Parks	Oak Valley Wildlife Mngmt Area	12,285	$424,013
Game and Parks	District III Headquarters	12,133	$917,113
Health and Human Svcs	Norfolk Regional Center Complex	366,611	$23,771,377
Health and Human Svcs	Norfolk Veterans' Home	142,478	$16,358,064
Military Department	Norfolk Armory	16,036	$1,212,727
State Patrol	Troop B Headquarters	7,840	$569,091
		Total Cost-	**$44,911,593**

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Platte County

Department	Description	Area (sq. ft.)	Building Cost
Department of Roads	Office and Equipment Shop	6,840	$469,266
Department of Roads	Engineers Office and Equipment	5,680	$412,206
Department of Roads	Office and Equipment Shop	3,200	$246,622
Military Department	Columbus Armory	15,522	$1,073,751
		Total Cost-	**$2,201,845**

Sarpy County

Department	Description	Area (sq. ft.)	Building Cost
Department of Roads	Rest Room Building (I-80 west)	999	$406,896
Department of Roads	Tour Guide Building	323	$27,096
Department of Roads	Office and Equipment Shop	7,740	$531,341
Game and Parks	Schramm State Recreation Area	34,261	$3,259,463
		Total Cost-	**$4,224,796**

Scotts Bluff County

Department	Description	Area (sq. ft.)	Building Cost
Correctional Services	Hasting Corrections Center	77,400	$5,796,586
DAS/Building Division	Panhandle State Office	27,602	$2,217,346
Department of Roads	Office and Equipment Shop	5,120	$326,306
Department of Roads	Construction Office	1,600	$103,692
Department of Roads	Construction Office Addition	768	$76,905
Game and Parks	Nine Mile Creek	1,860	$214,445
Game and Parks	Lake Minatare State Rec Area	7,481	$1,230,271
Health and Human Svcs	Western NE Veterans' Home Complex	82,234	$7,956,758
Military Department	Gering Armory	25,432	$1,805,999
Military Department	Scottsbluff Armory	20,640	$1,427,795
		Total Cost-	**$21,156,103**

Table III below identifies the total potential loss to structures and land in all 93 counties. This data is collected by the Nebraska Department of Property Assessment and Taxation from each County Assessor annually. As local plans are developed, they will identify more specific areas of vulnerability to the risks the individual jurisdictions identify high risks.

Chart I on page 15 identifies that 49% of the valuation of the State of Nebraska is residential structures and property, with Business and Industry structures, property and equipment at 22%. 25% of the State's valuation is Agricultural land, outbuildings, machinery and equipment.

See File “County Valuations.pdf”

See File “County Valuations.pdf”

See File “County Valuations.pdf”

See File “County Valuation Chart.pdf”

RISK ASSESSMENT

I. AGRICULTURAL

A. Location and Previous Occurrences

1. Following the outbreaks of several livestock diseases in Europe in 2001 and several possible cases in the US, the awareness of agricultural hazards increased. Since 95% of the land in Nebraska is devoted to agricultural pursuits, 95% of the state of Nebraska is at risk for agricultural related disasters. This figure can be broken down into at risk crop area and at risk livestock area. About 19.5 million acres in Nebraska are cropland and 25 million are rangeland or pasture.

2. There are an estimated 6.65 million head of cattle, 3.1 million head of swine, 116,000 head of sheep, 13.8 million poultry, and a domestic livestock industry consisting of approximately 160,000 horses, elk, bison, and other animals across the state. These animals are all susceptible to disease, whether naturally caused or from biological terrorist attack. The cropland of Nebraska is also vulnerable to disease. An estimated 1.14 billion bushels of corn (12% of the national total), 222 million bushels of soybean, 35 million bushels of sorghum, and 1.79 bushels of great northern beans (85% of the national total) are grown in the state.

3. No outbreaks have occurred in Nebraska, but a major contamination event or outbreak of disease could create environmental and public health hazards to the human population in Nebraska including exposure to hazardous materials and contaminated water supplies, crops, livestock, and food products. Since agriculture is such a large part of the Nebraskan economy, an outbreak would seriously effect the Nebraskan economy.

B. Probability of Future Events and Jurisdiction Vulnerability

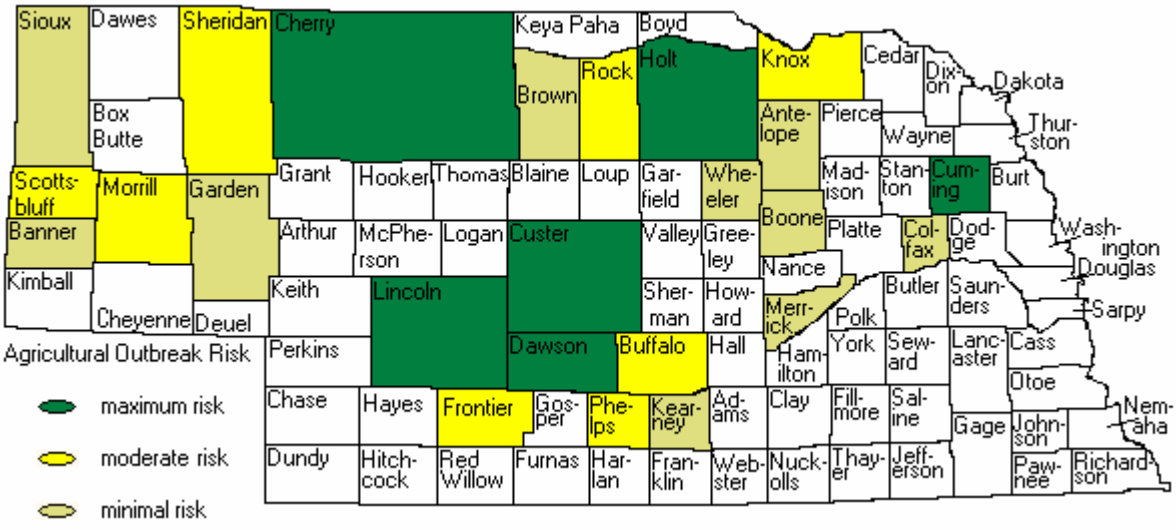
1. The vulnerable portions of the state depend on the types of agricultural hazard. For livestock, how the disease spreads determines the vulnerable jurisdictions. For diseases spread by airborne spores, any livestock surrounding the infected area or downwind from the infected area becomes vulnerable. For other diseases acquired by feed or direct contact, only the livestock immediately surrounding the infected animal becomes vulnerable. The same principles apply to crop diseases.

2. Further study of the possibility and sources of disease is being undertaken by the Department of Agriculture and will be included in future updates as the information becomes available.

3. The Department of Agriculture researched the vulnerabilities of the state to agricultural hazards and created the Livestock Emergency Disease Response System (LEDRS). This group of volunteer veterinarians monitors the agricultural status across the state and received additional training to recognize and respond to agricultural outbreaks.

4. Data from the annual livestock censuses shows where the greatest numbers of livestock live in the state. Based on this data, areas of the state can be determined vulnerable, especially to artificially induced disease.

Figure VII: Artificially Induced Agricultural Disease Vulnerability



C. Vulnerable State Facilities and Potential Dollar Losses to State

Although this hazard does not directly affect state facilities, it seriously affects the economy of the state. Agricultural outbreaks would also seriously affect the food sources of the state.

II. DROUGHT

A. Location and Previous Occurrences

1. Drought differs from other natural hazards in several ways. Drought is a slow-onset, creeping phenomenon and its impacts are largely non-structural. This makes the detection or early warning of drought conditions more difficult than the detection of quick-onset natural hazards that result in more visible, structural impacts. Drought normally affects more people than other natural hazards, and its impact spreads over a larger geographical area. This makes it more difficult to assess impacts and to provide assistance to drought-stricken areas.

2. Droughts are a part of state history with some of the most severe droughts occurring in the late 1800's, the 1930's and 1954-55. According to the drought monitors at the University of Nebraska- Lincoln, the panhandle is currently experiencing extreme drought and the central portion of Nebraska is experiencing moderate to severe drought. However, the panhandle is predicted to make some improvement during the

next few years along with the central portion.[5] As seen in the map below, the departures from normal precipitation rates improved during 2003, but in the first half of 2004, the rainfall rates were overall lower than average rainfall rates for that particular six-month period.[6]

Figure VIII: Departure from Normal Precipitation, 2003

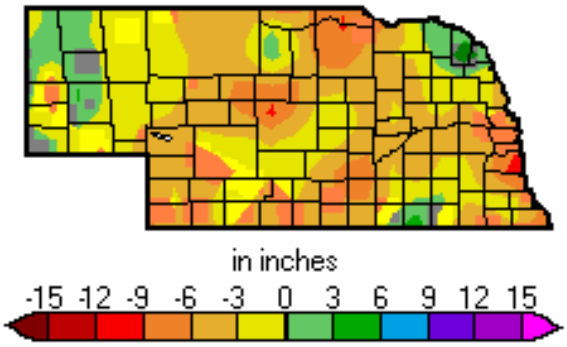


Table III: Rainfall Statistics for January-June 2004[7]

Region	Year 2004	Average	Percent of Average	Deficit (-) Surplus (+)
Chadron	4.76	9.37	51%	-4.61
Grand-Island	8.56	13.66	63%	-5.1
Hastings	12.07	14.35	84%	-2.28
Kearney	8.74	13.47	65%	-4.73
Lincoln	11.86	14.18	84%	-2.32
Norfolk	16.58	14.06	118%	2.52
North-Platte	9.92	10.62	93%	-0.7
Omaha-Epp	18.93	15.03	126%	3.9
Omaha-Valley	14.47	15.03	96%	-0.56
Scottsbluff	4.05	9.42	43%	-5.37
Sidney	6.81	10.98	62%	-4.17
Valentine	10.08	10.07	100%	0.01

3. Damage due to drought affects three main areas of the state's economy- a direct economic impact, social impacts, and environmental impacts. Losses in crop yields, crop quality, insect infestation, disease, and wildlife damage to crops and grazing lands are systematic to drought. Even with irrigated land, costs of production increase, non-irrigated crops may suffer with significantly lower yields thus reducing the profit margin

[5] http://drought.unl.edu/dm
[6] map data from http://hprcc.unl.edu/nebraska/drought
[7] www.disastercenter.com/nebraska/nebraska.htm

of crop production. Livestock producers suffer reduced productivity of rangeland, reduced milk production, reduced water availability, high livestock mortality, and increased feed and transportation costs. In general drought often causes decreased land prices, loss to industries dependant upon the agricultural economy, strain on financial institutions, and a higher unemployment rate in the state.

4. The Climate Assessment Response Committee actively tracks drought in Nebraska and in 1998 revised the drought mitigation plan written by a different committee in 1986. This plan was again revised in 2000.

5. In 2000, Governor Johanns appointed a Drought Management Team. This team met with the Governor to share information and discuss measures to be take to relieve drought effects like roadside haying, the Rural Mental Health Hotline, measures to aid stressed municipal water systems, the writing and dissemination of drought contingency plans for local governments, and water conservation measures to all municipalities. This team has continued to meet as called by the Governor during drought years.

B. Probability of Future Events and Jurisdiction Vulnerability

The likelihood of drought occurring in the future is high. Although drought cannot be prevented, certain measures can be taken to limit or reduce the effects of drought. The entire state is at risk for drought and is seriously impacted by drought. The most vulnerable portions of the state are cropland, pasture land for animals, recreational areas, and businesses that depend on agricultural industries for the bulk of their business.

C. Vulnerable State Facilities and Potential Dollar Losses to State

There is little or no risk of substantial dollar loss to state buildings due to drought conditions. However, there is a significant dollar loss to the government when a drought induced failing economy exists.

III. EARTHQUAKE

A. Location and Previous Occurrences

1. Between 1866 and 1990, 51 earthquakes occurred in Nebraska with intensity of I through VII using the modified Mercalli scale.[8] The strongest of the earthquakes occurred in the southeast half of the state. A majority of the quakes in recent history have ranged from 2.5 to 3.

2. The largest earthquake in Nebraskan history occurred in November 15, 1877. The worst damages took place in Columbus (located in Platte County) where the thirty-

[8] Earthquakes in Nebraska by Raymond R. Burchett, Educational Circular # 4a, Second Edition (expanded) 1990, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

second shock split the courthouse walls in nine places and damaged the schoolhouse walls. Other shocks were felt in North Platte and in neighboring states.[9]

3. Another major earthquakes happened on March 28, 1964. Damages involved cracked roadways in the city of Merriman, steep slope slumpings into the Niobrara River, and cracked stucco under residential windows.[10]

B. Probability of Future Events and Vulnerability of Jurisdictions

In comparison to the rest of the United States, Nebraska has a low probability of strong earthquake occurrences.

Figure IX: At-Risk Earthquake Areas in the United States

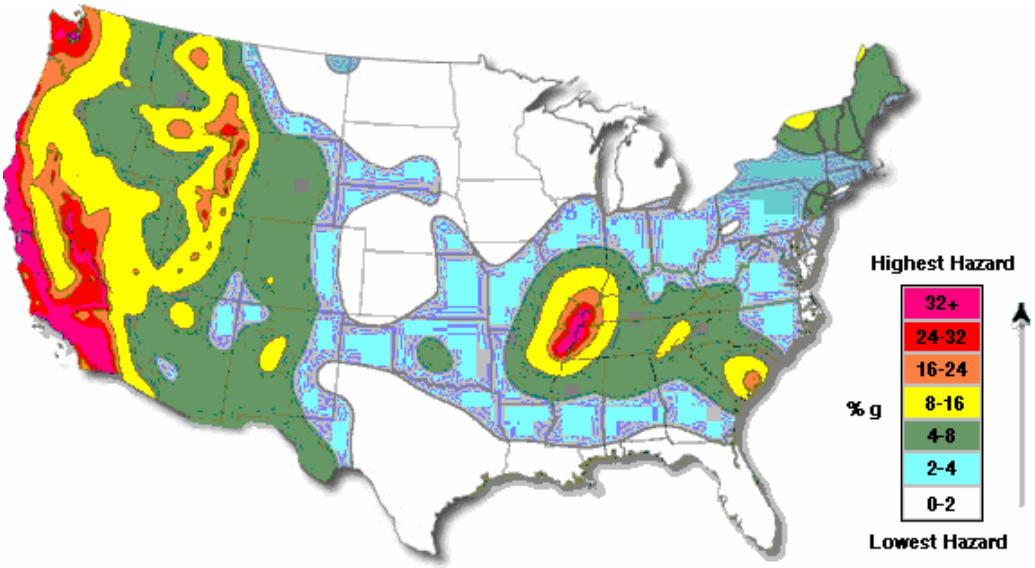
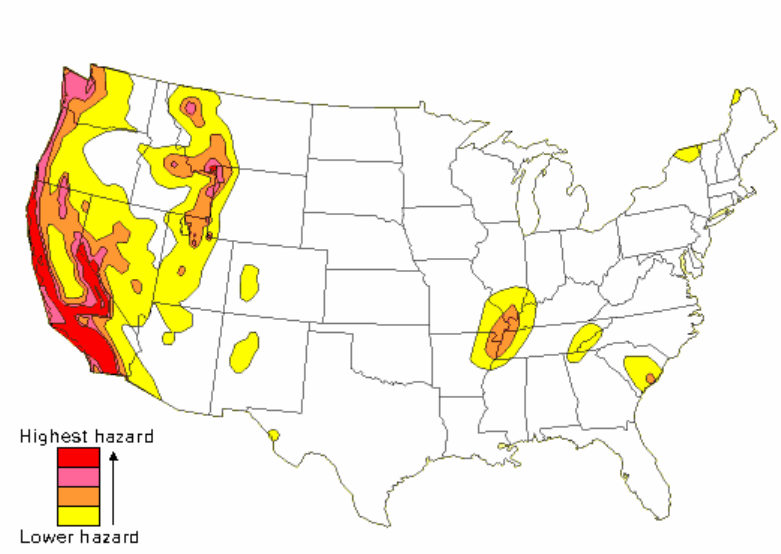


Figure X: Ground-Shaking Hazards from Earthquakes in the Contiguous United States

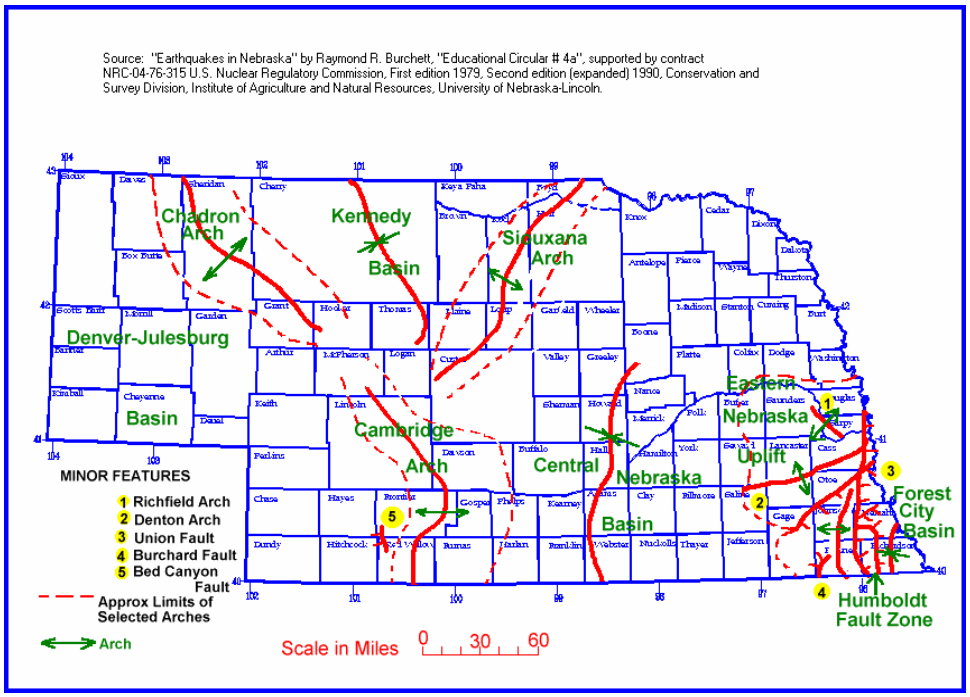


[9] http://neic.usgs.gov/
[10] http://neic.usgs.gov/neis/eq_depot/usa/1964_03_28_a.html

1. Both of these maps show that Nebraska's geographical location does not predispose the area to significant earthquake risk. Earthquakes that do occur inside the State are often insignificant and, in the rare occasions of increased earth movement, cause minimal damages to roads, buildings, and other structures.

2. All of the earthquake areas in Nebraska have low probability of sizeable ground-shaking occurrences as the USGS has rated them as moderate concern.

Figure XI: Fault Lines in the State



3. Historically, the strongest earthquakes have occurred in the southeast portion of the state and are at the greatest risk. Population statistics help indicate the most vulnerable portions of the high-risk areas of the state.

Table IV: Population Statistics for Risk Area

County	Square Mileage	Persons per sq. mi.	1990-2000 growth
Nemaha	409	18.5	-5.1%
Richardson	553	17.2	-4.1%
Otoe	616	25	8%
National Average	-	22.3	13.1%

a. These statistics show that while Nemaha and Richardson have decreased in population, Otoe has increased. Even though the rate of growth in Otoe County is less than the national average, the persons per square mile is greater. This shows that Otoe County is more vulnerable than both Nemaha and Richardson.

b. Utilities included within the above named counties include one nuclear power plant (Cooper Nuclear Station), one coal fired power plant near Nebraska City (Otoe County). Most of the commercial structures in the area date from the late 1800's to the 1940's. There are underground pipelines that traverse some counties in the area. A moderately strong earthquake in the mid 1930's did minor damage in the above named counties with some shifting of foundations generally less than one inch.

4. A strong earthquake greater than VII could pose a threat to underground pipelines and other underground utilities. Both the nuclear power plant and the coal power plant were constructed utilizing building standards designed to withstand projected earthquake loads. Otoe County is the most vulnerable due to its placement in the Humboldt Fault Zone, population density, population growth, and amount of state facilities in the county.

C. Vulnerable State Facilities and Potential Dollar Losses to State

Table V: State Facilities in Vulnerable Areas

Humbolt Fault	Johnson	Department of Corrections	$71,420,892.00
		Department of Roads	$687,353.00
	Johnson Total		$72,108,245.00
	Nemaha	Department of Roads	$576,115.00
	Nemaha Total		$576,115.00
	Otoe	Military Department	$1,268,275.00
		Department of Roads	$1,432,000.00
		Weigh Station	$110,000.00
		Arbor Lodge Complex (Historical Site)	$7,673,945.00
		Peru State College	$39,016,434.00
	Otoe Total		$49,500,654.00
	Pawnee	ETV Translator	$218,160.00
	Pawnee Total		$218,160.00
	Richardson	ETV Translator	$218,160.00
		Military Department	$896,730.00
		Department of Roads	$255,299.00
	Richardson Total		$1,370,189.00
Humbolt Total			**$122,403,174.00**

Bed Canyon Fault	Frontier	Department of Roads	$258,865.00
	Frontier Total		$258,865.00
	Red Willow	Military Department	$1,397,773.00
		Department of Roads	$942,295.00
		Department of Roads	$352,532.00
		Department of Corrections	$6,215,540.00
	Red Willow Total		$8,908,140.00
Bed Canyon Total			**$9,167,005.00**

D. State Owned Buildings and Potential Dollar Losses to State

The main state owned or operated infrastructure at risk from earthquakes are roads and bridges. There are a large number of bridges and many miles of road in these areas. The Department of Roads maintains a database of all bridges and road segments along with re-rerouting plans and cost collection methods in the event of damages.

IV. Flood

A. Location and Previous Occurrences

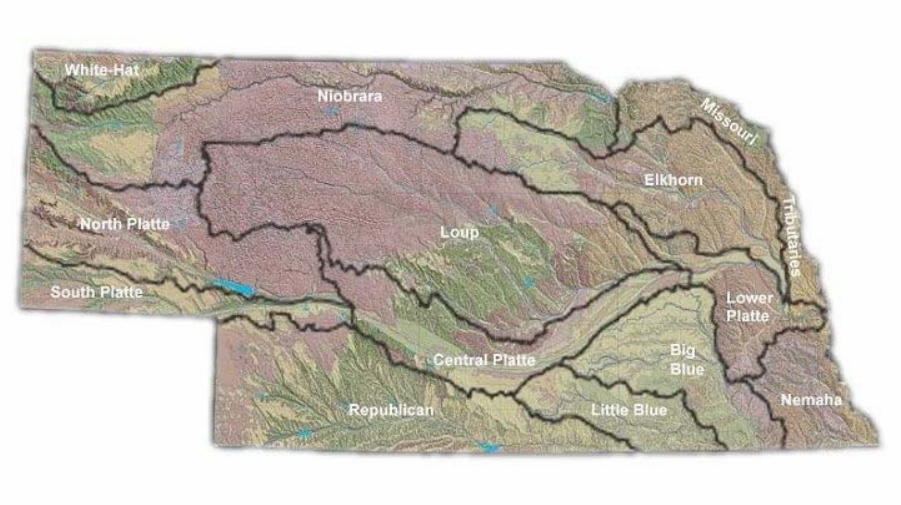
1. Floods result from two main factors in Nebraska, heavy precipitation and ice jams. Heavy precipitation can either cause flooding in the region of precipitation or in areas downstream. Heavy ice or snow precipitation can also cause flooding during the melting stage. These events are complicated by freeze/thaw cycles that cause moisture thawing during day and freezing at night. Ice jams occur when ice breaks up then stacks on itself where channels narrow to create a natural dam, often causing flooding within minutes of the dam formation.

2. Dam failure is a possible cause of flooding. To prevent this, the Department of Natural Resources monitors the dams in Nebraska.

3. All parts of the state can and have experienced flooding to some degree, but geology impacts where flooding occurs the most frequently. Flooding happens the most frequently along the Missouri and Platte Rivers and Big Blue, Elkhorn, and Republican River Basins.

4. Rivers in the sandhills, which are fed primarily through groundwater, tend not to flood or flood rarely. In addition to functioning as a capstone for underlying aquifers, the sandhillls act as a reservoir by absorbing excessive rainfall and releasing it to groundwater supplies in controlled amounts. The Loup River has flooded as a result of intense rainfall and the Niobrara has flooded as a result of an ice jam on the Missouri, but these occasions are rare for sandhill rivers.

Figure XII: River Basins of Nebraska



5. Major flooding events since 1990 by year-

June/July 1990- Widespread flooding and storm damage occurred in the eastern half of Nebraska. This flooding disaster was accompanied by tornado damage in the central and southwestern portions of the state.

May/June 1991- Both eastern and western Nebraska experienced flash flooding following torrential spring downpours.

August 1992- Eight counties in southeast Nebraska experienced damaging flooding following a series of late summer storms.

Winter 1993- Early warming conditions coupled with spring rains caused rapid snow melt and runoff. When aggravated by ice jamming, flooding resulted in an eleven county disaster area. This became a Federal disaster declaration, FEMA 983.

June/July 1993- A whopping 52 of 93 counties in Nebraska experienced flooding after record-breaking rains. This area was declared a Federal disaster area, FEMA 998. For the first time, Nebraska experienced two Federal disaster declarations in one year.

May 1996- Widespread flood and tornado damages resulted from a series of early summer storms meandering through southeast Nebraska. This became FEMA 1123.

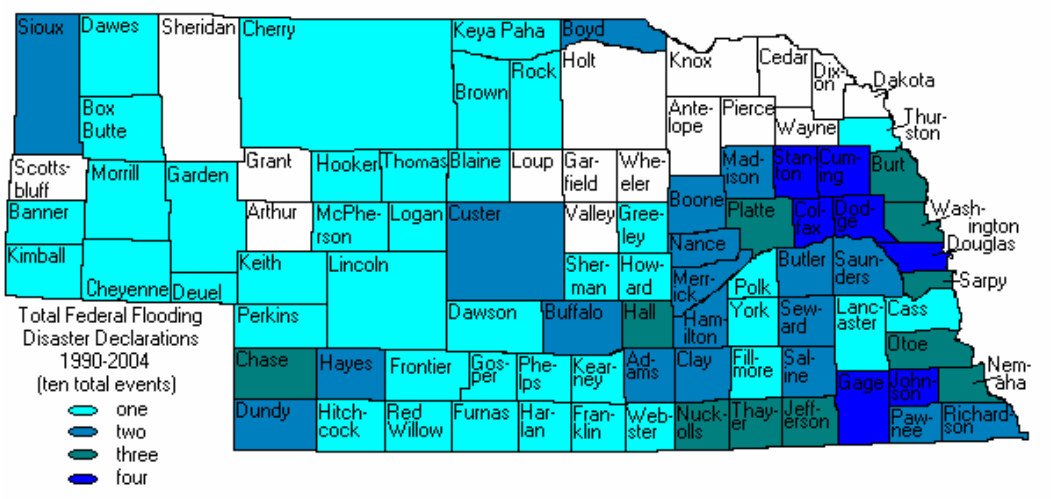
August 1999- Extreme rapid rains caused extensive flash flooding and heavy flood damage in East Central Nebraska. Rainfall amounts greater than three inches were sustained in a 6,000 square mile area; this was declared FEMA 1286 and extended through three counties.

April 2001- A storm system caused widespread damages to a twenty-eight county area.

June/July 2003- A storm in the eastern portion of the state caused an overflow of the Little Blue River that resulted in the flooding of several cities in Jefferson County.

May 2004- A storm system moving across the central and eastern portions of the state caused flooding in Omaha and subsequent structural damage of thirty-one buildings.

Figure XIII: Federal Flooding Disaster Declarations Since 1990



B. Probability of Future Events and Vulnerability

1. There is a high probability for flooding to continue in the state of Nebraska. By studying past flooding events and investigating population density, vulnerable areas of the state can be identified. The higher the population increase, the more acreage is being consumed for new development and carries the possibility of flood damage. As seen in the history of flooding, the eastern and southeastern portions of the state have a tendency to flood more frequently than the northern and western portions of the state. These areas in general are more vulnerable to future flooding, then by investigating areas of population growth, the most vulnerable counties can be determined.

Table VI: Top Ten Counties Showing a Population Increase from 1990 to 2000

County	Increase	County	Increase
Dawson	22.19%	Cass	14.15%
Dakota	20.97%	Washington	13.08%
Sarpy	19.51%	Buffalo	12.85%
Lancaster	17.15%	Douglas	11.32%
Colfax	14.25%	Gosper	11.15%

Six of these counties, Sarpy, Lancaster, Colfax, Cass, Washington, and Douglas, lay in the eastern portion of the state, making them highly vulnerable to future flooding events.

2. Communities with high flood insurance claims are also considered vulnerable areas.

Table VII: Top Five Counties with Flood Claims from 1978-1998:

Community	Number of Claims	Average Claim
Sarpy County	797	$8,162
Dodge County	332	$4,400
Douglas County	253	$5,099
Saunders County	164	$8,281
Beatrice (Gage County)	146	$8,082

C. State Owned Buildings at Risk and Potential Dollar Losses to State

1. Attachment 1 identifies the 1,324 state buildings and structures known to be located in a flood plain and gives the approximate dollar value. State critical infrastructure is included in this list.

2. Also, almost all of the state's more than 3,500 bridges are located in a flood plain. The Department of Roads (DOR) maintains a data base of bridges and a schedule for inspection and maintenance of the bridges along with preset plans for alternate routing of traffic and cost collection methodology in the event of damages.

V. Severe Winter Storm

A. Location and Previous Occurrences

1. Winter weather affects the entire state and are common in Nebraska from late fall to spring. Winter storms have affected the state as early as October and as late as May. Winter storms are the result of a high-pressure system with moderate temperatures colliding with a low-pressure system bringing in low temperatures. These storms may contain freezing rain, sleet, significant snowfall, and high winds. The complex mixture of moisture, temperature, high pressure, and low-pressure systems that create winter storms is generally unique for each storm.

2. Using statistics over a five-year average (1996-2001) the state can expect 32.8 events per year.[11] This included twelve fatalities and 28 injuries directly related to winter weather events during the time period of study. A further breakdown of statistics indicates the following:

   a. Winter storm events over the five-year period numbered 114 events or an average of 22.8 events per year.

   b. Heavy snow events over the five-year period numbered 19 events or an average of 3.8 events per year.

[11] Source-National Climate Data Center.

c. Blizzard storm events over the five-year period numbered 22 events or an average of 4.4 events per year.

d. Ice storm events over the five-year period numbered 9 events or an average of 1.8 events per year.

3. Fatalities

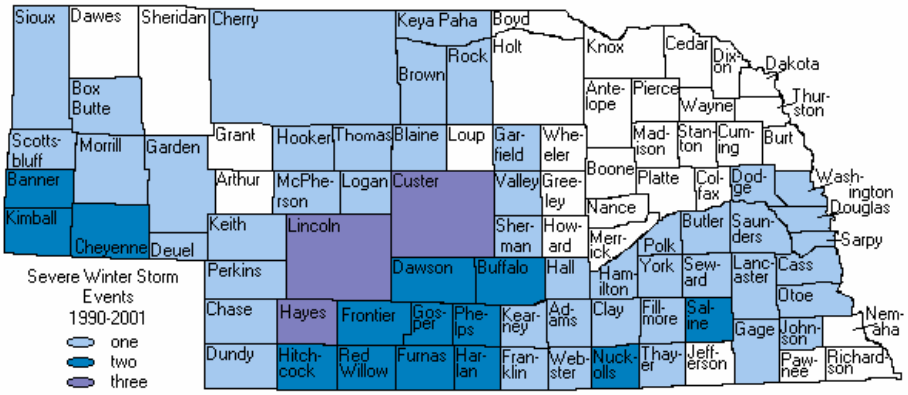
Table VIII: Fatality Breakdown by Winter Season

Season	Fatalities	Season	Fatalities
1996-1997	4	1999-2000	1
1997-1998	3	2000-2001	4
1998-1999	0	2001-2002	0

These figures show deaths caused by actual storm effects and do not include deaths caused by indirect effects such as shoveling snow or motor vehicle accidents.

4. Locations

Figure XIV: Severe Winter Storm Locations for 1990-2001



Even though this map highlights several areas as locations of high winter storm incidents, it shows even more that storms are spread across the entire state with the exception of the northeast corner.

B. Probability of Future Events and Vulnerability

The probability of future events is high since past history has shown that on average, 32.8 winter weather events occur each year. Most winter weather events are not considered localized events but generally affect a significant geographical area of the state. The entire state of Nebraska is vulnerable to winter storms, yet the nature of the vulnerability varies greatly. In populated areas, travel difficulties along with some power outages are

significant. In rural areas, wind driven snows hamper opening of roadways along with power outages lasting from several hours to several days. In addition to these, stresses on livestock increase livestock losses and can cause water and feeding concerns. In the western parts of the state, communities and farmsteads are spread out over vast distances therefore complicating emergency response.

C. State Owned Buildings at Risk and Potential Dollar Losses to State

Since the entire state has a high vulnerability to winter storm damage, the ten counties listed at the beginning of this section and the identified state facilities in these counties are the most vulnerable.

VI. Terrorism

A. Location and Previous Occurrences

1. All areas of the state are subject to some form of terrorist incident. For the purpose of this risk rating, both international and domestic terrorism are included.

2. The most recent act of terrorism involved finding mailbox bombs in rural areas of Howard, Platte, Fillmore, and Thayer counties in 2002 following several mailbox bombings in Illinois and Iowa.

B. Probability of Future Events and Vulnerability

1. Determining even the probability of terrorism is quite hard. Terrorist strikes, both international and domestic, depend on the goals and methods of the terrorists. However, domestic terrorists- right wing radical groups, left wing radical groups, and survival groups- may become more active in times of economic stress.

2. Identifying jurisdictions that are most threatened is a difficult task as the motives of possible terrorists are varied. There are two population centers that could be targeted- the Omaha Metro area including most of Douglas and Sarpy counties and the Lincoln area. However, there are other noteworthy targets in Nebraska because of their importance in the fields of economics, transportation, communications, agriculture, and food production. These facilities are being identified and prioritized by members of the Governor's Homeland Security Policy Group.

3. Based on input from a variety of state and federal agencies and from local government, these facilities are being categorized and assessed and will later be photographed and mapped using GIS technology. These records will be kept by the Nebraska Emergency Management Agency and will never be available to the public.

C. State Owned Buildings at Risk and Potential Dollar Losses to State

1. Recently, the Information Analysis and Infrastructure Protection (IAIP) division of the Department of Homeland Security laid out guidelines for the determination of critical infrastructure using predefined national thresholds. Nebraska is in process of expanding its critical infrastructure database to meet these national guidelines. It has also been proposed that the Governor's Homeland Security Policy Group identify a set of state critical infrastructure thresholds to better prepare and protect the state. Critical infrastructure that meets the national thresholds will become part of the Buffer Zone Planning Process. Some of these plans have been complete and are being reviewed by IAIP.

2. The critical infrastructure lists and plans, however, are designated by the Department of Homeland Security as Law Enforcement sensitive. For this plan, critical infrastructure data is intermixed with other state facility information and will not be identifiable as critical infrastructure data.

VII. THUNDERSTORM/HIGH WIND

A. Location and Previous Occurrences

1. Thunderstorms and high winds are a common event in the State. Because of its geographic location, Nebraska commonly experiences warm gulf moisture from the Gulf of Mexico that meets cool, dry air from Canada. This collision of warm, moist air with cool, dry air provides the ingredients for the production of thunderstorms. These thunderstorms can and often do become severe in the early spring and summer. Severe thunderstorms can produce gust front straight line winds in excess of 60 mph, heavy rain, hail up to the size of baseballs, micro-bursts, severe lightening, and, in extreme cases, tornadoes.

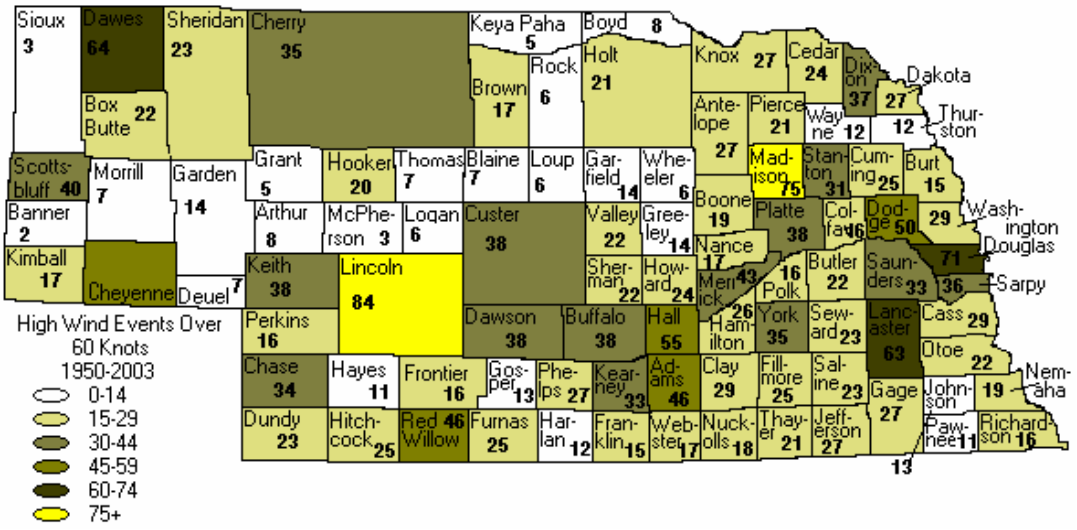
2. Thunderstorms maintain the highest frequency rate within the state. Thunderstorms can be isolated events covering a relatively small geographical area or can develop into squall lines that traverse the entire state.

B. Probability of Future Events and Vulnerability

1. Due to the geographic location of the state the probability of future events is very high. The number of thunderstorms expected to affect the state depends on yearly global weather patterns, making long-range prediction difficult.

2. The entire state is susceptible to thunderstorms and high winds and experiences both on a regular basis. Vulnerability is as discussed in the beginning of the Risk Assessment.

Figure XV: Wind Events (including thunderstorms) Higher than 60 Knots Reported to the National Weather Service from 1950-2003



C. Since the entire state has a high vulnerability to wind storm damage, the ten counties listed at the beginning of this section and the identified state facilities in these counties are the most vulnerable.

VIII. TORNADO

A. Location and Previous Occurrences

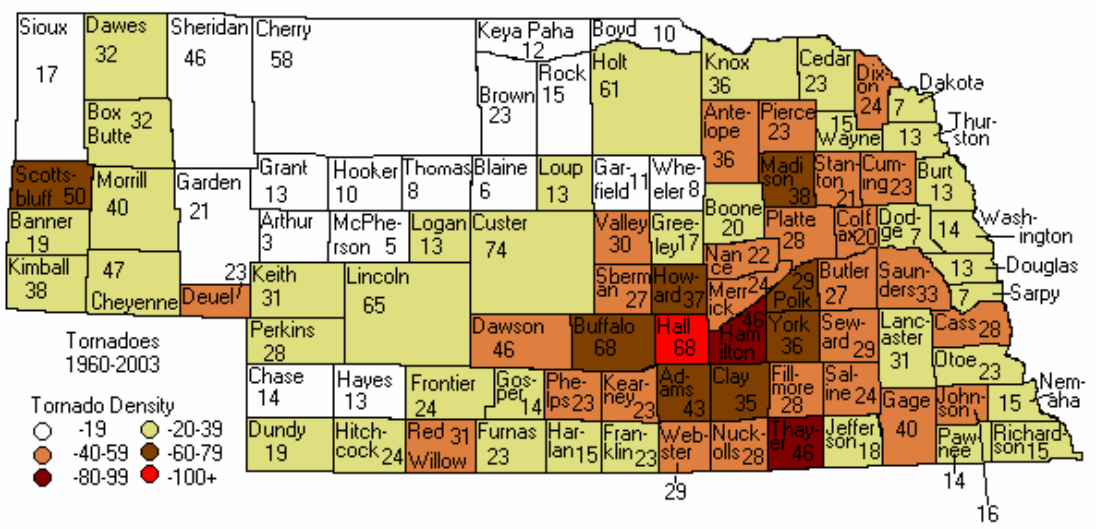
1. Tornadoes have affected every county in the state of Nebraska. Generally, tornadoes form from intense thunderstorms called super-cells but can develop from any thunderstorm that contains the correct elements. Nebraska ranks 5th in the nation for frequency of tornado activity, 23rd in the nation for tornado fatalities, and 24th for tornado related injuries.

Table VIII: Tornado Data from 1950-1995

Other Data	Amount	Annual Average
Fatalities	51	1
Injuries	1046	23.2
Cost	$633 million	$14.1 million

2. Indian tribes and early settlers reported tornadoes, and studies began on tornadoes in the early 1900's. In recent years, several tornadoes have caused extensive damage in Nebraska. In May of 1996, a tornado tore through the southeast portion of Nebraska. More storms occurred in 2002 and 2003, then in May of 2004, a large tornado system demolished two cities in southeast Nebraska.

Figure XVI: Number and Density of Tornadoes for 1960-2003



B. Probability of Future Events and Jurisdiction Vulnerability

1. Each year, there are on average 60 confirmed tornadoes in the state. Nebraska is within the area of one of the two defined "tornado alleys" in the United States. The probability of future events is considered high due to the geographic location of the State.[12]

2. Even though specific tornado locations cannot be predicted, data showing where tornadoes have occurred can help show any possibly vulnerable areas of the state. A study done in late 2003 by the UNL High Plains Regional Climate Center counted the number of tornadoes in Nebraska by county since 1950. Both the number of tornadoes in the county and the tornado density of the county show the past frequency of tornadoes in the state.

Table IX: Top Ten Tornado Frequency

County	Tornadoes	Population
Custer	74	11,793
Buffalo	68	42,259
Hall	68	53,534
Lincoln	65	34,632
Holt	61	11,551
Cherry	58	6,148
Scotts Bluff	50	36,951
Cheyenne	47	9,830
Sheridan	46	6,198
Thayer	46	6,055

[12] All tornado data: http://hprcc.unl.edu/nebraska/2003tornadoes-nebraska

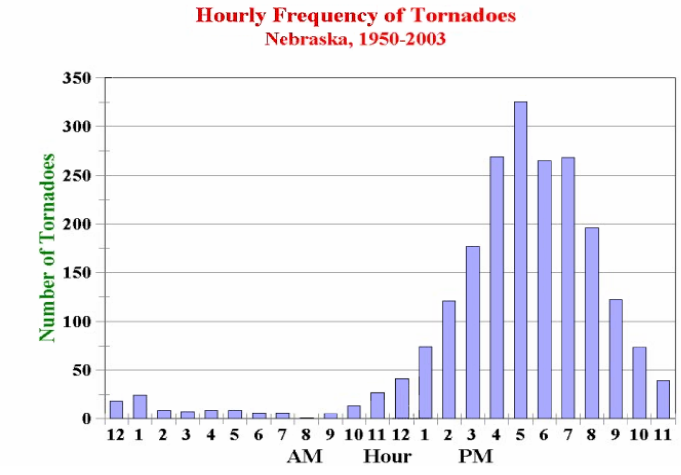
Table X: Top Ten Tornado Density:

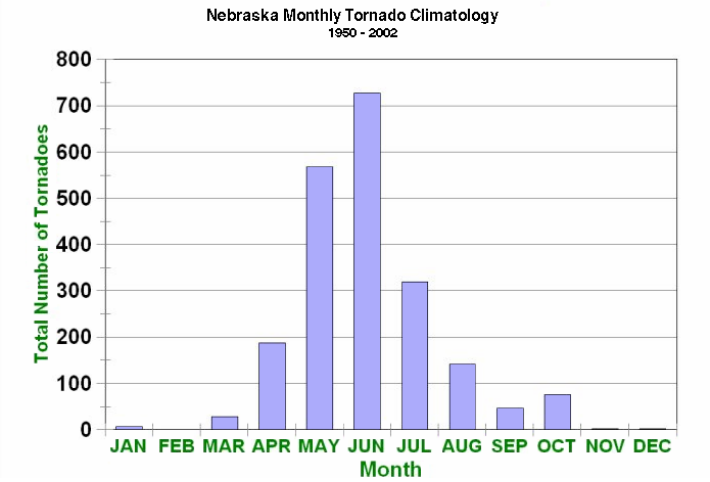
County	Area (sq. mi.)	Number	Density
Hall	546	68	124.5
Hamilton	544	46	84.6
Thayer	575	46	80.0
Adams	563	43	76.4
Buffalo	968	68	70.2
Scotts Bluff	739	50	67.7
Madison	573	38	66.3
Polk	439	29	66.1
Howard	570	37	64.9
York	576	36	62.5

3. Hall, Buffalo, Scotts Bluff, and Thayer Counties appear on both lists, showing that the most tornadoes occur in the central part of the state and in the panhandle. Hall and Buffalo Counties also have two of the largest populations in central Nebraska. The tornado density in the north portion of the state and the sandhills is low.

4. Many tornado studies have been accomplished by various organizations across the state. Two studies in particular show when tornadoes have occurred the most frequently in the past, both the hours of the tornadoes and the months of occurrence.

Figures XVII and XVIII:





C. State Owned Buildings at Risk and Potential Dollar Losses to State

Since the entire state has a high vulnerability to tornado damage, the ten counties listed at the beginning of this section and the identified state facilities in these counties are the most vulnerable.

IX. WILDFIRES

A. Location and Previous Occurrences

1. Wildfires occur the most regularly in the central and western portions of the state of Nebraska. These portions are most susceptible to drought because of the dry nature of the terrain and vegetation. Wildfires are responsible for extensive damage to crops and the environment and occasionally residential or business facilities. Wildfire causes can be broken down into two groups: natural starters and man-made starters.

2. The natural starter is lightning. The most common man-made starters are:

Campfires	Children
Debris burning	Electric fences
Equipment use	Railroad
Smoking	

3. The number of wildfires each year depends greatly on the amounts of rain received and the carelessness of individuals across the state. Rain can be predicted on a fairly regular basis, but people's actions (particularly accidental ones resulting in fires) are quite hard to predict.

Table XI: Wildfires and Area Burned 1998-2004

Year	Total Fires	Acres Charred
1998	796	34,367.16
1999	1498	186,044.3
2000	1784	199,921.5
2001	620	17,230.19
2002	1835	90,531.63
2003	1017	19,068.14
2004 (through April)	273	5,771.61

4. To prepare for and combat wildfire, Nebraska has identified the Nebraska Wildfire Council comprised of federal, state, and local fire-fighting organizations. The Council meets twice a year and has an Interagency Cooperative Fire Management Agreement. Signed by the agencies listed below, the Agreement contains information on cooperation, coordination, and reimbursement for share resources.

US Department of Interior-

National Parks Service, Midwest Region

Bureau of Indian Affairs, Great Plains Region

Bureau of Reclamation, Great Plains Region

Fish and Wildlife Service, Mountain Prairie Region

USDA- Forest Service, Rocky Mountain Region

Nebraska Emergency Management Agency

Nebraska Forest Service

Nebraska Department of Game and Parks

Nebraska Military Department

Nebraska Fire Marshal

5. The annual Wildfire Operating Plan is included in the State Emergency Operations Plan.

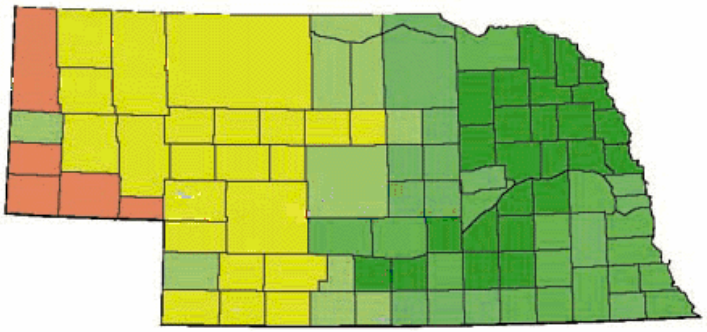
B. Probability of Future Events and Jurisdiction Vulnerability

1. The risk of wildfires is a real threat to landowners across the state. The National Weather Service daily monitors the risk factors in the state so that wildfires can be predicted, if not prevented. The risk factors under consideration are:

High temperature	Low humidity
High wind speed	Small cloud cover
Fuel moisture (greenness of vegetation)	

2. The greenness of vegetation is mapped for the state so portions vulnerable to wildfires can be identified. The National Weather Service uses figures like this for fuel moisture assessment. This particular map shows the vegetation conditions in summer of 2003.[13]

Figure XIX: Example Vegetation Map



Green represents high vegetation, yellow and red are associated with low vegetation

[13] www.nfs.unl.edu/firemain.htm

3. Along with the National Weather Service monitoring weather conditions surrounding wildfire probability, the Nebraska Forest Service (NFS) and NEMA have developed the Wildfire Aerial Suppression and Observation flight program. This program allows local Incident Commanders to obligate up to $10,000 in aerial suppression and $300 in surveillance flights by notifying NEMA of the need. These expenses are paid out of the Governor's Emergency Fund.

4. The NFS also has an online wildfire risk assessment for individuals living in wildfire prone areas to use to determine if their area and housing situation promote the occurrence of wildfire This online resource also provides tips to homeowners on helping prevent property damage from wildfires.

C. State Owned Buildings at Risk and Potential Dollar Losses to State

State facilities most at risk to wildfires are the buildings and improvements in the Chadron State Park in Dawes County, Bowring State Historical Park in Cherry County, and Ft. Robinson State Park in Dawes County.

	Building	Area (Sq Ft)	Approx Value	
Chadron State Park	Maintenance Shop, Building #1	800	$46,116	
	Fire House	864	$99,150	
	Ball Diamond Restoom	432	$74,939	
	Picnic Area	432	$74,939	
	Lagoon Restroom	432	$74,939	
	Entrance Control Booth	74	$6,915	
	Tractor Shed	160	$6,961	
	Storage Building	960	$55,339	
	Trading Post	3000	$259,409	
	Horse Barn	2448	$112,986	
	Storage Building	364	$17,293	
	Swimming Pool & Bath House	2100	$576,468	
	Central Building	39908	$449,643	
	Cabin #101 - #102	1736	$149,880	
	Cabain #103 - 104	1736	$149,880	
	Cabin #105 - #106	1736	$149,880	
	Laundry House	504	$46,116	
	Maintenance Buidling/shop	1800	$103,763	
	Cabin #1	576	$51,880	
	Cabin #2	412	$34,587	
	Cabin #3	608	$51,880	
	Cabin #4	468	$40,351	
	Cabin #5	456	$40,351	
	Cabin #6	576	$48,199	
	Cabin #7	576	$51,880	
	Cabin #8	576	$51,880	

	Building	Area (Sq Ft)	Approx Value	
	Cabin #9	576	$51,880	
	Cabin #10	397	$34,587	
	Cabin #11	404	$34,587	
	Cabin #12	404	$34,587	
	Cabin #13	404	$34,587	
	Cabin #14	397	$34,587	
	Cabin #15	397	$34,587	
	Cabin #16	377	$34,587	
	Shower/Latrine New Campground	829	$132,586	
	Stable	2973	$115,293	
		Chadron State Park Total		**$3,367,492**
Ft. Robinson State Park				
	Play House and Storage	5750	$662,937	
	Playhouse	5750	$910,819	
	Swimming Pool & Bath House	1700	$1,152,937	
	Shop Storage	7200	$830,113	
	Officer's Quarters #17	6000	$1,383,524	
	Officer's Quarters #16	6000	$1,383,524	
	Officers Quarters #15	6000	$1,383,524	
	Officers Quarters #19	7000	$1,614,112	
	Latrine Building #10	1000	$172,940	
	Latrine Building #11	1000	$172,940	
	Stable Building #103	6000	$1,383,542	
	Stable Building #104	6000	$1,383,542	
	Stable Building #105	6000	$1,383,542	
	Stable Building #106	6000	$1,383,524	
	Garage Building #7C	2250	$194,557	
	Arena Office, Building #307	2400	$207,527	
	Shop Storage	7200	$622,585	
	Work Shop	2400	$207,527	
	Sale Barn	2000	$172,940	
	Guard Stable	1800	$207,527	
	Guard Stable	1800	$207,527	
	Mare Barn	1120	$451,949	
	Lodge, Building #38	31000	$7,148,211	
	Building # 42	2000	$23,587	
	Building #43	2000	$230,587	
	Building #44	2000	$230,587	
	Building #45	2000	$230,587	
	Building #47	2500	$230,587	
	Building #5	4000	$461,174	
	Building #6	4000	$461,174	
	Building #7	4000	$461,174	
	Building #8	4000	$461,174	
	Building #9	4000	$461,174	

	Building	Area (Sq Ft)	Approx Value	
	Commanche Halls, Building #1	18000	$2,075,286	
	Bandmaster's Home	1036	$119,442	
	Shower Houst	567	$130,741	
	Fire House	650	$93,674	
	Animal Handling Chute	2500	$115,293	
	Storage Building	450	$18,157	
	North Residence	700	$80,705	
	Frame Residence	700	$80,705	
	Red Frame Quarters	700	$80,705	
	Red Frame Quarters	600	$69,175	
	Building #46	2000	$230,587	
	Superintendent's Residence	3200	$368,938	
	Assistant Super's Residence	2800	$322,821	
	Hospital Steward's Quarters	1800	$207,527	
	Garage #1	1400	$89,795	
	Garage #2	500	$24,941	
	Garage #3	400	$19,953	
	Two Car Garage	900	$44,896	
	Bunkhouse #1	600	$23,279	
	Bunkhouse #2	600	$23,279	
	Barn	5000	$221,718	
	Calving Shed	1200	$46,559	
	Dairy Barn	1200	$53,211	
	Milk House	1000	$44,343	
	Hayshed #1	1200	$46,559	
	Hayshed #2	1200	$46,559	
	Hayshed #3	1200	$46,559	
	Yearling Annex	1600	$145,446	
	Hay Shed Shower Building	800	$121,248	
		Ft. Robinson State Park Total		**$32,865,776**
Bowring State Historical Park				
	Visitor's Center	7955	$581,079	
	Maintenance/Shop/Storage	2376	$118,507	
	Superintendent's Shop	512	$25,496	
		Bowring State Park Total		**$725,082**
		Wildfire Totals		**$36,958,350**

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